Hobbies WEEKLY

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CONTENTS

A 16in. long pull-along

MODEL FARM TRUCK

THE advent of the tractor has brought into use a special design of truck, much easier to manipulate on soft ground than the tumbril. Fitted with broad rubber-tyred wheels, it is easier to draw over the fields, and its lengthy body spreads the load well. A small model of this useful and popular truck would make a welcome present to a youngster, so here are the necessary particulars.

A side elevation is given in Fig. 1, a rear one at Fig. 2, and a front one at Fig. 3. From these a helpful idea of the general construction is given, and certain dimensions. The body is just a tray, as it were, of four sides and a bottom.

Make it from ¼in. fretwood, or, if something cheaper is preferred, from box wood of about that thickness. A box from the grocers may serve, one of those with sides of $\frac{5}{16}$in. wood would do nicely. The inside surface will probably be unplaned and therefore rough, but a few strokes of a smoothing plane would soon put that right. Glue and nails will fix the lot together quite satisfactorily.

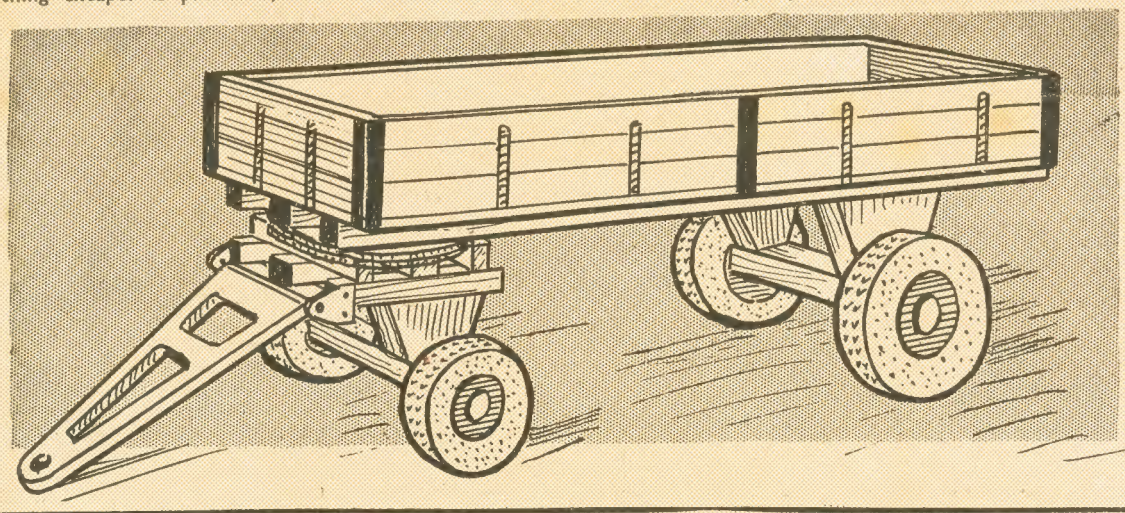
Underneath the body two strips of ½in. by ⅜in. wood are glued, running the whole length except just ½in. each end. These are fixed 1in. from each side, so will measure 4in. across, obviously. In between these, at (A) in Fig. 3, a third strip is glued. This is of ½in. square stuff and 4ins. long only.

Bogie Details

It is placed with its fore end level with the front of the truck, directly above the bogie which carries the front wheels. Cut a disc of ¼in. fretwood, 4in. diameter, and glue this underneath the body to cover strip (A). It will extend to the side strips as well, as seen at (B) in Fig. 3.

To the side strips, at the end of the body, two pieces of wood (D) to be cut from 1in. deal, are fixed, for supporting the rear axle bar. Fig. 2 shows these, while the details (D) and (E) in Fig. 4 gives dimensions and shape. It will be seen from (E) that these parts are rebated at their tops, ½in. by ⅜in., for them to fix over the side strips underneath the body.

The axle, which is nailed to them across, is a piece of ½in. square wood. Two nails should be driven in these parts through the axle, and to avoid the



nails, perhaps, getting in the way of the screws for fixing the wheels on, drive them in at least ¾in. from each end of the axle.

The bogie for the front wheels, see Figs. 1 and 3, consists of strips of wood, 4ins. long, joined together crosswise to make a square of that size. Three pieces each way are required, the side ones being of ⅜in. by ¼in. wood, and the middle ones of ⅜in. by ½in. wood, the extra width of the middle ones being necessary to carry the pivot screw on which the bogie swings. It will be seen that the top side strips are placed ¼in. in from the sides.

Axle Supports

Having glued and nailed these together, add a ⅜in. square strip in front, underneath, shown at (F) (Fig. 1). Supports to carry the axle are fitted at (G). These are cut and shaped from 1in. deal to sizes given at (G) and (E) in Fig. 4, and are fitted on with glue and nails, as for the back axle, already described.

A similar axle is screwed across. A second disc of ¼in. fretwood, 4ins. diameter is now cut; this is glued over the bogie, and comes, when the bogie is fitted to the truck, directly under disc (B) in Fig. 3. It is lettered (C) to distinguish it. A detail of the complete bogie is given in Fig. 5, and shows the disc (partly cut away for clarity) in position.

The bogie can now be fitted underneath the truck with a round-headed screw, going through the centre of both discs, and into the middle bar (A) above. Slip a small brass washer under the head of this screw, and do not tighten the screw too much; a little latitude must be allowed for the bogie to swing freely. Obviously, the front axle will have to be removed for the pivot screw to be driven in, or alternatively, the screw could be put in before the axle is fixed across.

To carry the towing bar, two small pieces of stout metal sheet are screwed where shown at (H) in Fig. 5. These are 1in. long and ¾in. wide, with holes drilled in for fixing, and also for the pins of the towing bar. They should be firmly screwed, and be strong enough not to bend as the bogie is swung round.

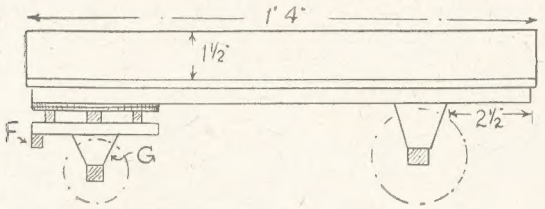


Fig. 1—Side elevation of body and chassis

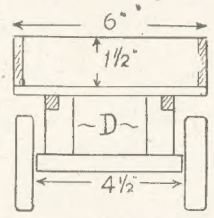


Fig. 2—A back end view

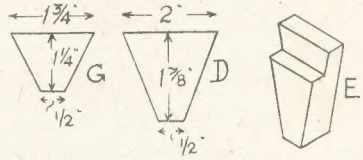


Fig. 4—The axle support pieces

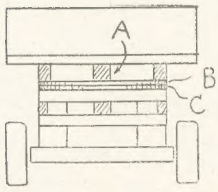


Fig. 3—Front end view

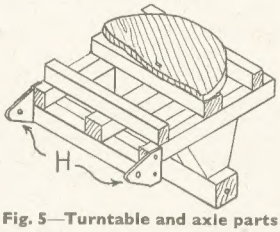


Fig. 5—Turntable and axle parts

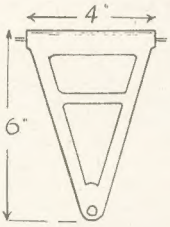


Fig. 6—Towbar shape

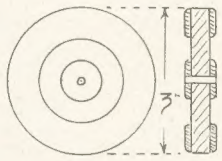


Fig. 7—Plan and section of wheel

Towing Bar

The towing bar, Fig. 6, is cut to the shape and size shown at Fig. 6, from ¼in. fretwood. The rear end edge is rounded off, and a thin brass nail driven in each side through brass pieces (H). It may be mentioned here that a little liberty has been taken with this part.

The actual towing bar on the prototype was made of stout steel bar, not unlike Fig. 6 in shape, but was considered just a little bit awkward for an amateur woodworker to copy. As the fitting for it, fixed to the truck, was also on the difficult side, the much simpler form of bar, adopted for this model, was considered much better. Beyond this, the model follows the lines of its prototype quite faithfully.

The Wheels

The wheels for the model are shown at Fig. 7. The reader here can, if he so pleases, buy metal tyred wheels to fit on instead of making them. Wheels 2ins. diameter are required for the front and 3ins. diameter for the back. The only snag is such wheels are not really thick enough to suit the model. Actually, the tyres should be about ⅜in. thick. However, bought wheels do save a lot of trouble.

If the reader prefers realism, the wheels can be cut from ⅜in. thick wood, with ⅜in. wide rings of ⅛in. wood glued on back and front to increase the thickness of the tyres. Discs of ⅛in. wood are also glued over the centres. Dimensions given in Fig. 7 are for the rear wheels, the front ones, as already mentioned, are 2in. diameter rings and discs as before. Fix the wheels with suitable round-headed screws, and take great care to bore preliminary holes for these in the axle bars to avoid splitting the wood.

Paint the completed truck red, with black for the metal parts, real, and similated. Centre of wheels red and tyres grey. Imitation ironwork on the body can be marked in in black paint also, to choice. Take care to get lines straight and narrow.

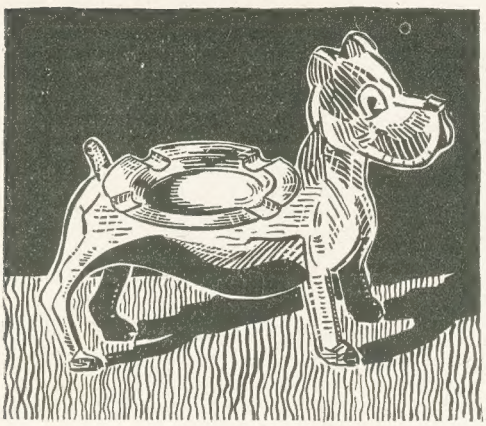
A LETTER a little time ago from a reader in South Africa raises a matter which is frequently a complaint from overseas. Perhaps a general explanation here will save other readers writing about it and show how unable we are to alter the unfortunate situation. You see, I am always being asked—'Why don't you publish nice large pieces of work as you did before the war? Like the Coronation Coach, the Big Ben Model, Eiffel Tower, etc.' The letter above-mentioned gets a dig at me by the generous supplies of paper which were sent for salvage during the war so there should be plenty now! Now the explanation is not paper but wood shortage. A little time ago it was both paper and wood. In the British Isles we have gone without things so long, that we never expect anything else, and take it as an everyday situation. We overlook, maybe, that many of these other countries have an abundance of material—just as overseas readers overlook that their abundance is not shared by us.

* * *

I ONLY wish that it could be possible to print designs for those large and popular articles we had before the war. But if I did nobody would be able to find the boards from which to construct them. Wood, let me tell our overseas readers, is still very short in England; only obtainable in bulk under Government licence, and only released for what the department considers essential things—housing, schools furniture, radio cabinets, etc. Thus, it is at present impossible for me to produce a design of any large model with the hope of readers here being able to get sufficient suitable wood to build. Pre-war abundance of beautiful fretwood or even plywood looks like being a dream of the past for some time to come.

The Editor

A carved dog shape makes a simple standing
NOVELTY ASH TRAY



ALL dogs should be trained to perform one useful trick, and the cheerful little fellow who heads this article, although only of carved wood, obliges by holding an ash tray ready for use. As a rule, ash trays are not too sightly and are distributed only when needed—and if they can be found! This ash tray, however, is so colourful that it is always on service.

Apart from using the carved dog as a support for an ash tray, it can be made separately, as a model in its own right. In this case, the dog's back, instead of being dead straight, as shown, can be more naturally curved.

A Caricature

Dog fanciers will immediately perceive that the hound illustrated is not likely to win honours at Crufts show. He has purposely been made somewhat grotesque, however, because to carve a realistic model of a dog requires not only a very high standard of carving technique but also artistic skill of no small merit.

If, however, one starts on a grotesque job and makes errors of proportion, etc., no one will mind. They will think that such is actually intended. Moreover, for such a purpose, a grotesque dog looks better than a carefully modelled one.

We mention this point because some readers might care to model a reasonably accurate figure. This can be done by modifying the following instructions.

A full-sized pattern is first drawn. This is obtained by enlarging the squared pattern shown in Fig. 2. Note particularly that the length of the dog's back depends on the size of tray you are using. That used by the present writer was about 3½ins. diameter. Should you have one that is larger, the body must be made longer.

Having drawn the outline, trace it to a piece of cardboard and cut out a template which can be laid on the wood and pencilled round. The wood is at least 1½ins. thick. Note, from the small sketch (Fig. 5) the direction of the grain, i.e., it runs the long way of the dog's legs.

Wood of the thickness mentioned is rather too thick to be sawn with an ordinary fretsaw, though if available the type of saw known as a coping saw can be used. The usual way, however, is first to rough out the figure by means of straight sawcuts as in Fig. 3 and remove some other waste with a gouge and/or chisel.

Cutting and Shaping

Do not attempt to remove any waste with a rasp or file, however, either at this stage or in later stages. Work is to be done with a sharp penknife (whittled), leaving the wood in a faceted surface. Any glasspapering and smoothing will destroy the charm.

The space between the legs is sawn out. Fig. 6 shows the effect to aim at. Do not work at any one part too long but go all over the model, advancing the whole lot together. That is, do not completely model the head before making a start on the body.

At a very early stage, make sure that the model will stand firmly. Place a sheet of glasspaper on a flat surface, face upwards, and rub the dog, on all fours, over it.

The ash tray can be either purchased or home made. Instructions on how to beat out a small copper ash tray have often been given. The dished lid of a Lyle's Golden Syrup tin makes a foundation for an ash tray if small curved pieces are soldered on (Fig. 7)

Ash trays can, of course, be purchased, in metal or plastic.

The ash tray is held on the dog's back by a metal peg that goes into a hole in the wood. This peg can be a threaded screw (as shown in the section drawing Fig. 4), which passes through a hole drilled in the centre of the ash tray and held with a nut tightly screwed against it below. Other methods will suggest themselves to the reader. If one has facilities for getting metal chromium, etc., plated, one can get a fairly cheap ash tray, drill a hole, insert a suitable peg and solder. The heat from the solder may destroy existing polish, but the whole job can be replated.

The peg should be a good, though not tight fit in the hole in the dog's back, so that the tray can easily be removed for emptying and cleaning.

Finish

The dog will probably look better if left in a natural wood finish with just a coat of plain varnish. As already mentioned, the model must stand firm. If it should overbalance easily, a wooden base can be made, as hinted in Fig. 6. This has four shallow holes made in it to take the dog's feet.

The tail is made separately, and is merely a small peg which goes into a hole drilled for it. It is best added after the tray has been fitted.

Although the model is not painted, an exception might be made in the case of the nose tip, which is painted black. It is possible to put a small wooden ball or bead here to get a comic bulbous nose effect. A simple eye might be painted in.

The best wood to use is soft pine, if available.

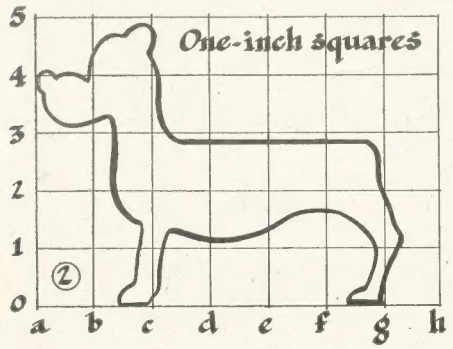


Fig. 2—Outline of animal in 1in. squares

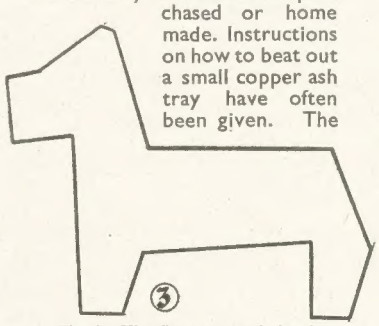
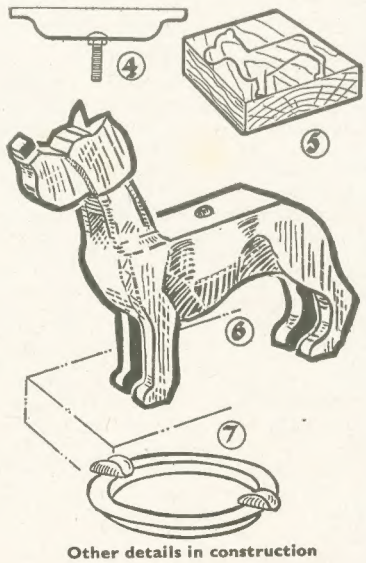


Fig. 3—The first general shaping



Other details in construction

What the radio constructor should know about TELEVISION AERIALS

WITH an ordinary long- and medium-wave receiver almost any length of wire anywhere outside or indoors will give quite good reception, but with a television set matters are very different, except for a few people very near the transmitters. The main requirement of a television aerial is that it should pick up as much of the transmitted signal as possible, yet not include too much interference.

To fulfil these requirements the aerial is usually as high as possible, and its length is critical because it acts as a tuned circuit, and should resonate at the frequency of the transmitter.

For Sound Reception

Simple two- or three-valvers of suitable design are capable of receiving the sound part of the programme over quite long range, and experimenters anxious to try their luck in this direction will find the aerial system is not particularly critical.

It is, however, necessary that the aerial wire, which may be erected in the usual way, be short. Twenty feet should be looked upon as the maximum for the London transmitter, and fifteen feet for the Birmingham transmitter. The wire can be taken through the window and vertically up the side of the house, being held a few feet from the wall, if possible.

For preference it should also be on the side of the house facing the transmitter. Where reception is good, quite satisfactory results can normally be obtained from such an aerial.

Sound and Vision

For best results, however, a special type of aerial is desirable, and this becomes practically essential for vision reception at any great distance from the transmitter. Such an aerial is usually of the type shown in Fig. 1.

The aerial (which is the left-hand vertical section in the diagram) consists of two metal rods, clamped together at the middle, but insulated from each other at this point. Normally, these rods will total a length which resonates at half the wavelength of the transmitter.

The London vision signal is transmitted on 45 megacycles, with the sound on 41.5 megacycles. For the Birmingham transmitter, frequencies of 61.75 and 58.25 megacycles are used, for vision and sound respectively. As both sound and vision have to be received on one aerial, the latter is usually of such a length as to come midway between the frequencies.

Without going into the calculations, this gives 10ft. 4⅛in. for London and 7ft. 9⅜in. for Birmingham. By using tubing of large diameter the band width of the aerial is increased, so that it can receive both vision and sound signals well.

Aluminium tubing about ½in. to 1in. in diameter is easily obtainable from some stores and it is possible to clamp two lengths of this together at the centre, together with a support at right-angles. Upper and lower sections of aerial will be the same length, and total the figures given. The inner ends will be an inch or so apart.

As ultra-short waves travel only on the surface of metal, the tubes should for preference be polished and painted to prevent corrosion.

The feeder consists of two leads, either in the form of co-axial cable or twin leads. One lead is connected to the lower end of the upper aerial tube; the second to the upper end of the lower aerial tube.

The feeder should travel at right angles away from the tubes for a distance

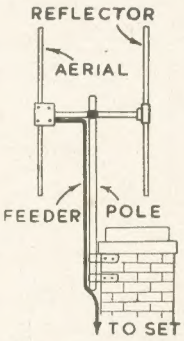


Fig. 1—An aerial with a reflector

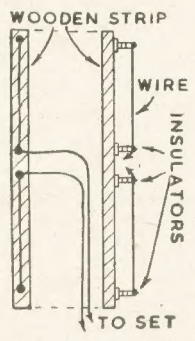


Fig. 2—A simplified form of dipole aerial

equivalent to at least ⅛th wavelength of the transmitter, and this accounts for the aerial being on a projecting support. (Wavelengths are: London, vision: 6.66 metres; sound: 7.2 metres. Birmingham, vision: 4.8 metres, and sound: 5.1 metres approximate (anticipated).) Fortunately, the measurements are not particularly critical, though excessive variations from them will cause reduction in efficiency.

Adjusting Aerial Length

Unless several tubes are cut it is not easy to alter the length of the aerial rods, though the possibility of having one tube slide on another in telescopic form should not be overlooked.

Some manufacturers of television receivers intend an aerial of special dimensions to be used (for example, one giving optimum results on the vision frequency), but as a rule this is not particularly critical, except when the receiver is used at some considerable distance from the transmitter, or in an area where conditions are bad. In these circumstances a few experiments may be necessary with a home-made aerial before best results are obtained.

So far, nothing has been said of the reflector in Fig. 1. In many cases this is omitted. Where used, it has two functions—to improve signal strength, and reduce interference. It is a single metal rod, connected to nothing, and fixed vertically at a distance of ¼ wavelength from the aerial.

The whole array is erected so that if a line were drawn from transmitter to aerial, the reflector would come immediately behind the latter. If the exact direction is not known, the aerial can be turned round a little and the effect noted.

Such a reflector is usually only necessary when the receiver is a long way from the transmitter, or used in an area where reception is bad.

Reducing Interference

The human ear is very tolerant of some measure of distortion, or occasional crackles, etc., but the same trouble in a vision set may ruin the picture by introducing blotches, etc. Even with a simple two-valver for sound reception the ignition of passing cars will be heard as a series of rapid clicks if the aerial is bad.

To avoid this, the aerial should be as high and far from the road as possible. Proper feeder cable will not pick up any signals, including interference, so it is the position of the aerial itself which is important.

If interference is bad, it may be alleviated by situating a reflector rod between aerial and the locality of the interference. In bad cases two or more reflectors may be situated in a semicircle round the aerial, so that the latter is screened in all directions but that facing the transmitter. Only when an attempt is made at reception outside the usual transmitter range is such treatment usually necessary.

A Simplified Form of Dipole

Aerials of the type described are termed dipoles, and it is possible to use two stout wires supported on suitable stand-off insulators secured to a wooden strip, as shown in Fig. 2. This is less effective than the proper aerial, but simple to construct and capable of quite good results.

The method of arriving at the length of the wires has already been described. As before, the downleads must travel for at least ⅛th wavelength horizontally before coming down to the receiver.

The range at which satisfactory reception may be obtained depends largely on local conditions. Within a radius of 25 miles from a transmitter, good results should normally be obtainable, and satisfactory results may also be possible up to 50 miles or so.

The presence of high buildings, hills, etc., between transmitter and receiver will severely reduce the signal. On the other hand, satisfactory reception has been reported at ranges of some hundreds of miles, though this may only occur occasionally. It is impossible to prophecy results accurately.

Preparation and distribution in connection with
THE CHRISTMAS TREE

ATTENTION to the Xmas tree usually falls to the lot of the home handyman so here are some hints on dealing with this very seasonable decoration. There are plenty of so-called Christmas trees on sale now and obtaining one will give no trouble. These 'trees' are usually small spruce fir tops. The true tree should be conical in shape and even the best are seldom this, but with a little trimming quite a good effect can be obtained.

Shaping

Temporarily fit the tree in something firm and clip the evergreen to as near the desired shape as possible. There will generally be some quite big pieces to cut off and these can be used to fill thin patches. The end of the piece to be put in is sharpened to a point and a small hole drilled in the main stem. Glue the point and insert in the hole, using fine wire if necessary to keep the outer part of the addition in correct position.

To get the tree really in good form it should be bought early so there is time to work on it, and it can be kept fresh by putting the end in a bucket of water.

To fix the tree for the room where it will be used, obtain a large flower pot if it is of medium size, but get a small barrel if the tree is really big. An apple barrel from the greengrocer's will do well.

Holding Framework

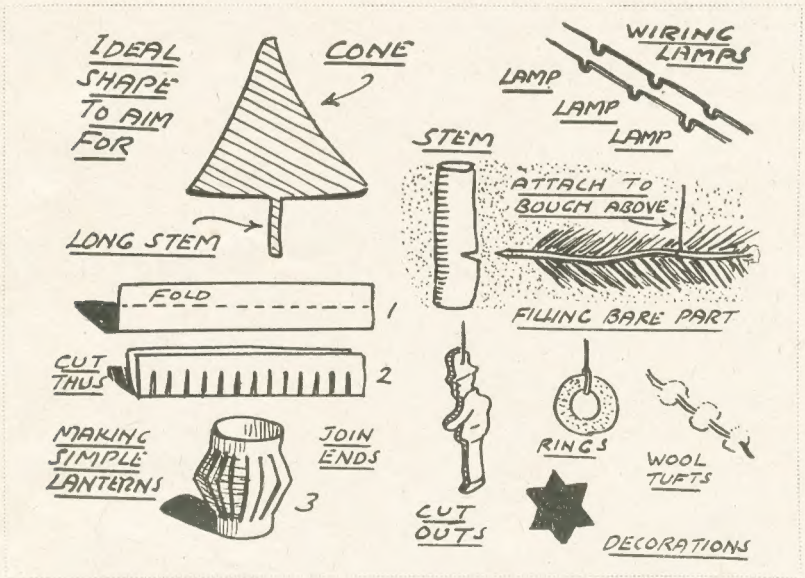
In both cases fill tightly with damp soil, and after inserting the bared end of the stem which should belong and if possible go right to the bottom, prepare a small frame as shown which will go round the stem and just jam into the top of the pot or barrel. The last cross-piece, of course, is only fitted after the frame is in position. The pieces should go tightly round the tree, otherwise the effect of the frame is lost. Held thus, the tree will be very rigid. Complete the container with coloured fancy paper.

Lighting

The tree fixed, now come the lights. Candles are effective, but a nuisance and dangerous. Sets of small electric bulbs are much better. They can be bought ready wired, but if you want to wire your own bulbs, this is done in parallel.

Clear bulbs can be coloured by dipping in amyl acetate containing a little dye. This at once gives an even, transparent and pure colour. Any other kind of painting is useless as it simply shows up as black when the light is on.

Decorations are still expensive and while it is good to buy some, quite a number can be readily home produced. A big star for the top, for instance, is easily made from a star cut from card covered with silver paper. A number of smaller stars hanging about the tree look well and should be in various colours.



Bottle Tops

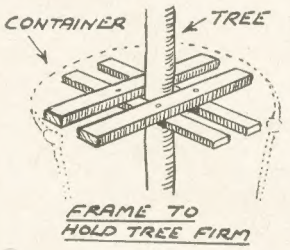
Milk bottle tops covered with coloured paper make good decorations; while silver paper cut into narrow strips and held by elastic bands look well. A lot can be done, too, with strips of vividly coloured cellophane, and also baby ribbon.

Fir-cones brightly painted make an excellent and cheap decoration and quite a number should be used. The colours should be of the light, bright variety, i.e. yellows, reds, etc. Silver and gilt, of course, are very effective as they catch and reflect the light. Small Chinese lanterns—alight or otherwise— look well and are very easily made from transparent paper. Quaint figures mounted, as 'Sunny Jim' from 'Force', give a bright appearance, but must not be too big.

Dabs of whitewash or white distemper along the boughs looks like snow, as do tufts of cotton wool. The latter is particularly effective and a few pence-worth goes quite a long way.

Safety Measures

Play for safety with Christmas trees, especially if using candles, and have handy a bucket of water with one or two large damp cloths. For one never knows what might happen.



Perhaps you will be giving all the family presents out from the tree—which really is a good idea even if it has to be later on in the day. The big articles can be placed around the base, and this is where a fair-sized pot or tub for holding comes in useful. The smaller things can be hung on the boughs if you ensure that those in question are strong enough for the particular weight.

Attach either with fine wire or fine string that can be easily *cut*. It is annoying when presents will not come off and the instinctive desire to give a sharp pull may produce disastrous results. In any case, quite simple knots have a knack of tightening up when tugged.

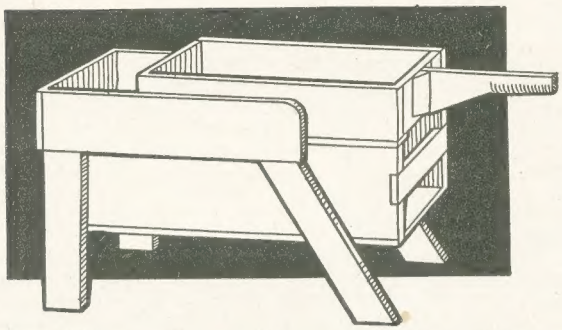
Distribution

For giving out the presents there should be two persons. This makes the proceedings go better for one can announce the present and the other cut it down and hand it to the recipient. Two persons working together like this can give a really 'official' slant to the occasion. It makes a grand opportunity too for a lot of humour if the two are spontaneous 'gaggers'.

It is best to make the Christmas tree part of the evening a localized event, and then clearing everything up to get on with the games or whatever the rest of the programme is. The tree, of course, remains as a room decoration. Making 'the tree' a special and definite item of the evening always ensures it being more appreciated. It adds more interest to the programme and a definite time should be announced for it beforehand to keep excitement and anticipation high.

Deal with the household fire ashes by making

A CINDER SIFTER BOX



THERE is really no need to make the complete contrivance shown here for sifting cinders in the ordinary way. All one requires is just the sifter pan itself, the cinders being put on the mesh at the bottom of the pan. This pan is shaken over a dust bin to get rid of the ash and dust.

The suggestion given here, however, is much to be preferred, as it prevents dust flying about while sifting is going on. A cradle or stand is made upon which the sifter rests and is pushed backwards and forwards on a pair of runners. The ashes and dust not wanted drop through into the box, and when all the cinders are sifted, the cradle can be lifted and tilted so the ash inside slides down to the front, out through the opening and so into the dust bin.

Dustproof

It will be noted that we have included a lid for the sifter. This again prevents

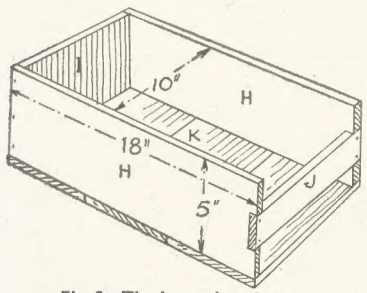


Fig. 2—The lower box frame

dust from rising during operations, but, of course, the lid may be omitted if desired, although it allows the sifting to be done indoors.

The whole contrivance can easily be made up from box wood if this can be found or got $\frac{3}{8}$in. to $\frac{1}{2}$in. thick. The box or boxes should be carefully taken apart and the nails removed and straightened for renailing when making the sifter and cradle. If the box is somewhere near the sizes suggested here, then there need be no further cutting down and the cradle part can be made to correspond with the sizes of the box or sifter.

The Sifter

Commence by making the sifter, as Fig. 1 shows. It consists of a box-like frame formed of two sides (A) 12ins. by 3ins., two ends (B) about 9ins. by 3ins. and an under frame made up of four parts (D) and (E) to the exact size of the box, that is 12ins. by 10ins. To the underside of the frame is nailed a piece of wire netting of small mesh. Then, over this, is secured the frame by nailing into the edges of the box. This frame strengthens the mesh netting by gripping it between the two wood layers.

A Handle

A handle should be fitted as shown at one end of the sifter. This is about 8ins.

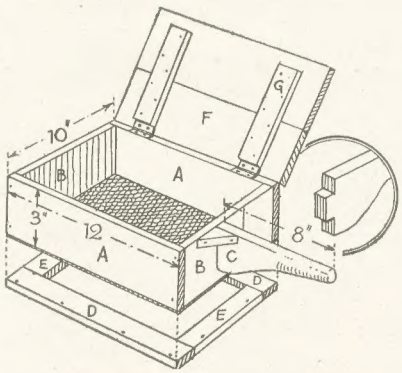


Fig. 1—Sifter constructional details

long, shaped and rounded at the end to suit the hand. A tenon is formed also at the square end, as in the enlarged detail In Fig. 1, a corresponding mortise cut to fit it being made centrally in the end of the sifter box. Two small angle blocks can be nailed on each side of the handle to strengthen it. If a lid is made for the sifter then it can take the form shown, two 5in. boards as (F) being butted together and held by cross battens (G) nailed on underneath.

The Holder Box

The box to take the dust underneath the sifter is made as the diagram Fig. 2 shows. There are two sides (H) 18ins. by 5ins., one end (I) about 10ins. by 5ins., one bar (J) cut from stuff about 2ins. wide to the full width of the box. This bar (J) should be let into the sides (H) to come flush with the edges of them, as illustrated in Fig. 2.

Care should be taken in making the box, and cutting the various pieces, to see that its overall width is $\frac{1}{4}$in. or so more than the full width of the sifter pan. Thus when the upper sides (L) are fixed to the box, the pan will have ample clearance each side for free movement backwards and forwards.

The floor of the box may be formed from three or more pieces of stuff cut the full width of the framing and nailed to the underside, as seen in Fig. 2.

The Outside Stand

The formation of the cradle to be built round the box is shown in Fig. 3, and the first parts to cut and nail on will be the two upper flange rails (L). These are 3ins. or so wide and lap down on to the box top about 1in. to allow for secure nailing thereto. Round off the front corners of the rails as shown and make smooth. Then cut and fix the

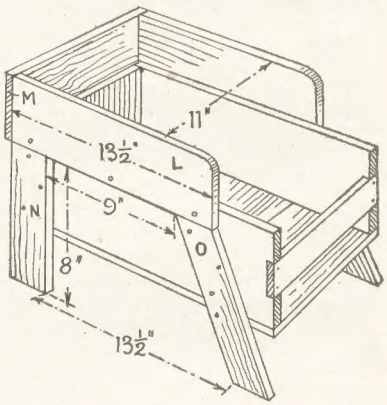


Fig. 3—The stand portion and box

back rail (M) full width of box and side rails and nail this securely to the box.

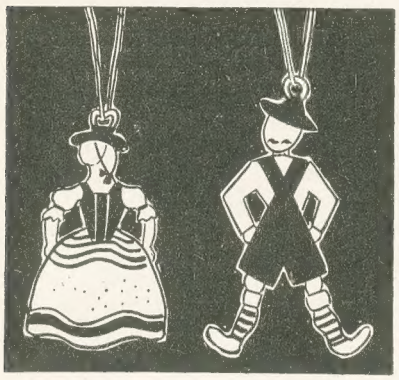
Two back legs (N) are next marked and cut about 2in. side. These are again nailed to the sides of the box. The two front legs slope to take the weight of the box towards the front. Each leg is 10$\frac{1}{2}$in. long, allowing for cutting the ends to an angle to fit along on the underside of rail (L) and to the floor.

All the woodwork may be painted or the whole thing simply creosoted to preserve the wood in case it is kept outside in the rain or damp.

Make the whole thing strong and rigid because it will probably come in for some rough handling during its use. See all nails or screws are secure in place.

Patterns on page 191 for shapes in wood or plastic of these

BROOCHES AND PENDANTS



ON the inside back cover we provide full-size patterns primarily intended for making novel brooches and buttons, etc., in wood or sheet plastic. We say primarily, since the designs can be used in many different ways. Suitably enlarged, they may be used for decorating all manner of handicraft projects—boxes, book ends, firescreens, lampshades and so forth, either as designs painted on or as overlays cut in thin material and mounted.

If the brooch is to be painted in enamels afterwards, plywood can be used, but in certain cases, as for example in the sea-horse (A) this would look well if made in some dark wood and left in self-colour after a good polishing.

Patterns and Pins

If the patterns are required for brooches, a pin must be fitted. Cut a slot in the back, making this rather rough and jagged, and insert a safety pin, as shown in Fig. 3. Fill up the hole with plastic wood (Fig. 4). A better job is made by using a proper brooch pin (Fig. 7). It is also possible to obtain special brooch backs of the type illustrated in Fig. 1. These have a metal base to which the brooch itself, whether of wood or plastic sheet, may be cemented.

If using such backs, it is as well to make a brooch mounting board of the type shown in Fig. 2. This is merely a small block of wood with a slot large enough to take the pin, leaving the flat part of the brooch in contact with the block. In this way the cementing of brooch to base may be done under pressure and a reliable job made.

Brooch Mounting

We have purposely not yet mentioned any special thickness for the wood or plastic sheet, as this will depend on the type of brooch being made. If the brooch is to be mounted on a metal brooch-back, quite thin material can be used, but thicker material must be used if a pin is being let in, as in Fig. 3.

It is assumed that, normally, the designs will be cut out flat, with a rounding over of edges, but it is possible to cut them out of wood quite $\frac{1}{2}$in. thick and then do some modelling with a pen-knife. For example, the tortoise (G on the pattern sheet) can have quite a domed shell.

These designs can also be used as pendants. In this case it is necessary to provide a ring for them to hang by, and this is best done by forming this in the material itself, as shown in Fig. 5.

For Pendants

Naturally the wood must be reasonably thick and of good quality hardwood. It is no use trying to do this in material of firewood quality. The hole is first drilled with a twist drill whilst the wood is comparatively thick and the shaping afterwards done with a penknife and file. It is best to make the ring first, to make sure you have this correct before getting on with the rest of the shaping and decorating.

Note particularly that if this is to be done, sufficient material must be left on the pattern. This is indicated in (B) on the pattern sheet.

It is possible, of course, to insert a metal ring (at right angles) through a hole drilled through the face of the material. There is a tendency, however, for a pendant to turn instead of lying flat, if this is done. Especially with some plastics, it may be possible to insert metal rings, or horseshoe-shaped pieces of wire into the thickness of the material, so that the ring lies flat with the surface of the material. This is shown on the two figures that decoratively head this article.

The Figure Work

Let us consider the patterns separately. We have already mentioned that the sea-horse (A) can be cut in a dark wood and left self-colour. It is best to cut round an outline as at (Fig. 6) and then, putting the piece in a small vice, saw (with a tenon saw) and file cut the notches around the edge. As with many of the other patterns, small glass beads can be used for the eyes.

The bird (B) is quite conventionalised and can be in any colour you fancy, or, better, a colour to match the dress or coat on which it will be worn. You could, for example make it a very light blue-grey with dabs of white on the breast. The eye (if a bead is not used) could be dull red with a black dot. The beak is yellow.

Fish and Kingfisher

The fish would look nice if cut in a piece of green plastic sheet (C). The markings can be painted on, but keep them simple. It is possible to engrave them on, using a veining tool or something similar.

The kingfisher (D) calls for some nice colouring, since its brilliant colouring makes it easily recognisible. At any public library you can get a book which will show a kingfisher in full colours. Ask the assistant. The upper parts are bright blue with a greenish sheen to the wings. The neck and face are white. The beak is black. Our pattern, by the way, shows a young bird just learning to dive.

As regards the tortoise, everyone knows the colour of tortoiseshell, but it may be remarked that, for a novelty, one can have a bright blue tortoise if one feels so inclined. But a nice piece of golden-brown wood left self-colour after being polished would be a good idea.

It is possible to cut this tortoise in two parts. The first should be the all-over shape, cut fairly thin. The second should be the circular shell part, cut thicker, and, as already hinted, modelled. The two parts are then glued together.

Tyrolean

The two figures—the pompadour lady (E) and the Tyrolese lad (F) will, as already hinted, be not only useful for making brooches and pendants, but can be used (if enlarged) for decorating all manner of handicraft projects. Do not attempt to paint in the facial features (except the man's moustache) as the scale is far too small. The lady could have a pink skirt and hat, with a black bodice and light blue overskirt. The blouse is white and so is the hair (wig).

The Tyrolese lad can be quite gaily painted, say, with an orange-red shirt and stockings and blue shorts, hat, braces and boots.

The small pattern (H) is not intended to be cut out but serves to show how one can design wooden buttons (using button blanks obtainable from dressmakers) and painting in peasant-art style.

AN EXHIBITION AT SHEFFIELD

Readers who live in Sheffield and the district around should make a point of visiting an interesting exhibition to be held on the last three days of the year—Dec. 29th, 30th and 31st. A number of cash prizes will be awarded as well as cups and trophies. The Exhibition is organised by the Sheffield Society of Aeromodellers and is being held at the Central Technical School, Leopold Street. Further details are obtainable from Hobbies Sheffield Branch at 4 St. Paul's Parade.

Make a weather proof and attractive roof by undertaking

BIRDHOUSE THATCHING

WINTER is the time when birds need food to be put out for them. Not to mention water in periods of frost when the usual puddles, gutters and ponds present nothing but a hard surface of ice.

The best way to offer these necessities is by the means of birdhouses placed in sheltered positions about your garden. It is the most interesting way, too, for here you can watch your visitors enjoying their meals—say, from some window or other place where you will not disturb them. With birdhouses, too, it is far more easy to keep an eye on the food supply and see an adequate amount is always to hand than if crumbs and pieces of bread are just thrown out on the ground.

Designs for birdhouses have often been given in these pages, but here is a novel way of completing the roofs. The idea can be worked in with almost any type of house, making even the most simple look a well-finished article.

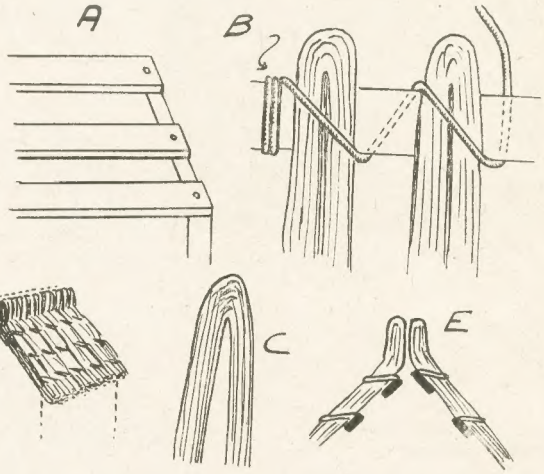
Simple Thatching

As will be seen by the sketch the principle is like the thatching that you see on hay and corn ricks when in the country. This is how it is done.

The material used for the thatch is ordinary long grass or hay (straw is too stiff), with the binding a length of twine. First then, get a considerable amount of hay or grass collected, because the work —if tight—takes rather more than might at first be supposed. Also have a fair amount of twine to hand.

Whatever sort of birdhouse you are making, for this roof finish there must be three strips of wood as (A) going the whole distance from end-piece to end-piece. These should not be less than ¾in. wide.

Now take three lengths of the twine and secure one to the end of each strip with a firm knot (B). To make the fastening safer still it is good to run one or two pins through the twine into the wood.



Bands of hay are now prepared as (C). These should be of more or less equal thickness. It does not matter being the same length for the moment providing that when they are doubled they are slightly longer than the slope of the roof. The hay in the bands should have the individual stalks lying parallel and the best way to effect this is actually to comb the wads with one of those very wide- toothed combs used for animals.

Holding the length of hay in one hand by its end and against something flat, the comb is gently drawn down it. This brings the separate pieces in line with one another and pulls away any broken and uneven bits.

Being satisfied that the band or tuft of hay is as you want it, bend the length in the middle as shown and lay on the roof strips. One point to note is that about 2ins. must be made to protrude from the top as (E). This is to meet the thatch from the other side, so a fair amount must stick out from the eaves at the lower edge so that when trimming has been carried out there is about an inch over-hang.

The band in position, the twine is taken over as shown, then down under the strip and back to the top again. Do this at each strip with the three lengths of twine. Make things as tight as possible to start with, but a final tightening up is effected later.

Having got piece of hay No. 1 in position, take a second length and laying it alongside repeat the procedure. That is, take the twines over and down under the strips once more. Push length of hay No. 2 up to, and in fairly tight contact with, length No. 1, and then proceed with length No. 3, and so on till the roof is covered. The twines are now finally tightened up, a button hook being useful in doing this. Starting at one end give each loop of twine a gentle pull, carrying the slack forward a section at a time till the end is reached. Here the length is firmly fastened, a pin or two again making all secure.

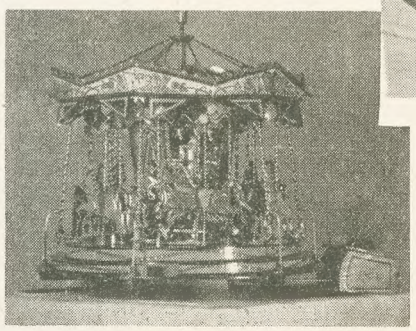
A Neat Finish

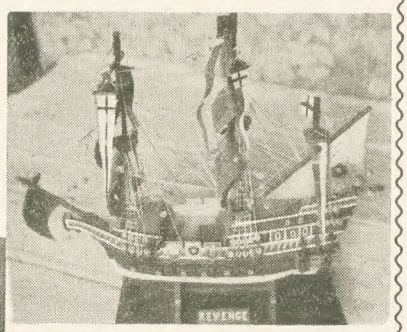
As first put on the ends down at the eaves will be ragged and uneven so these are trimmed with a sharp pair of scissors. The top ends (E) should lie together as indicated, but if on account of the quality of the grass they do not, a neat finish can be obtained by slipping in a thin piece of wood, tin or even card between the two halves. If quite thin this will not be noticeable and will give a firm rigid 'ridge'.

If correctly carried out, thatching of this type is a good solid job giving as much strength to the final roof as if wood had solely been used. It is also quite waterproof, keeping out the rain which adds considerably to the comfort of the little inhabitants.

Prize Models

THE realistic old-time roundabout model with its galloping horses was the work of three years for Mr. W. C. Hellard of The Terrace, Penryn, Cornwall. It is fitted with light and sound, driven by a gramophone motor and won first prize at the Falmouth Model Exhibition.





THE above attractive 14in. model of The Revenge was made from our design (No. 235 Special) by Mr. T. Wright, 20 Sinclair Avenue, Banbury, and won a prize for him at the local Crafts Festival. Having obtained such a success with his first model, he is now building the Stage Coach to enter as next year's effort.

How to use the camera to obtain attractive
CHRISTMAS STUDIES

DURING the winter there is, unfortunately, a falling off of camera enthusiasm with a very large majority of amateurs, and often as soon as that last spool is exhausted the camera is just 'put away'. There are, of course, various reasons for this apparent disinterestedness in the hobby. Many folks find their spare time fully taken up with work on the negatives made during the summer time. Others are fully occupied with important studies which fall due for attention in the winter months. And there is always a very great number who, although possessing really good apparatus, only do photography when on holidays or on special occasions.

This Jigsaw Party picture was obtained with H.P.3 film, F.8 stop, 1/25 sec. exposure, 250 watt lamp supplementary to ordinary 120 watt light, distance 10ft. from camera.

It is, however, good to note that despite these and many other reasons there is always something in the nature of a reawakening of interest in quite a number of keen and semi-keen amateurs at this time of festivity and holiday-making. Christmastime and, in fact, the months of December and January bring into our lives happenings that are incident to this season of the year and which are very definitely good subjects for the camera. Proof of this is the remark which is so often heard 'What a pity there was not a camera handy'.

Suitable Subjects

There are, indeed, all sorts of things. The preparations beforehand; the decorations with holly and evergreen; the arrival of friends; opening the parcels; the children's new dresses and the games and fun during the evenings. These are a few of the simple items which occur indoors and it is easy enough to add quite a number of seasonal outdoor subjects, such as scenes in the shopping area before-hand; christmas crowds at the station; breaking-up day at school; Christmas morning outside the church. And it might be that a fall of snow sometime during the holiday will give that almost unique opportunity of a few exposures typifying a White Christmas.

Well, there are a few suggestions and they should be sufficient to bring to the mind of every reader others with a more personal and individual atmosphere and to create the determination to get a spool of film at once and to have the camera ready for a few shots.

Indoor Pictures

How should one set about taking such shots indoors when the house is full of friends and probably some game is in progress? This query is purposely mentioned and the author hopes to answer it in such a way as to be of service both to the photographer and to his friends.

Indoor shots will require some extra lighting and for this a few yards of extra flex may also be necessary. It will be very advisable to measure the distances from the wall plug to where the camera is likely to be in operation. Also the length between the camera and the folks who are to figure in the photographs. Will it be necessary to move any article of furniture? If these and similar preliminary arrangements can be noted well beforehand much annoyance can be avoided as well as waste of time.

The great point about photography in the home is to do everything possible to make the occasion part of the fun of the evening and to get friends to enjoy participating. To this end, do not spoil the show by being too serious yourself, but do try to have everything ready. Then the three or four shots need only take a few minutes.

Lighting

The light is naturally the most important item and it is best to supplement the ordinary room lighting by using a movable lamp with a bulb of, say, 250 watts. This should be fitted with a handy switch for quickly working on and off as required. A softer effect seems to result from the use of the pearl type of bulb—an effect which is very desirable in all artificial light photographs.

With a fast film such as H.P.3 and a fairly large aperture as F8, an exposure of 1/10th should be about right. This, however, must be gauged by the surroundings and furnishings of the room. If these are dark and heavy, giving practically no reflection, then the exposure time must be correspondingly increased. As it is practically impossible to give an exact timing for such work it is the usual custom to vary the times somewhat to be sure of getting accuracy in some. If you have any records of similar shots then, obviously, the right thing to do is to turn them out and make use of that experience.

For Close-ups

For 'close-up' subjects care must be taken to avoid too much glare from the light. It is not only very uncomfortable for the individuals but the result is likely to be very 'sooty and whitewashy'. This can be remedied by the use of a screen of white muslin held between the light and the person or by throwing the full glare of the light on to a sheet of white paper placed a yard or so from the victim and to the side.

A few evenings ago a very interesting and exciting game was found and it should prove a jolly quarter of an hour in many homes this Christmas. Four or five persons are gathered round a table on which a fairly easy Jig-saw puzzle has been spilled. The actual picture is placed in a position available to all competitors and they have to make up the complete picture. As each person places a piece in position they shout 'Piece' and the judge records this against their name. The game is won by the person who has successfully placed the highest number of pieces.

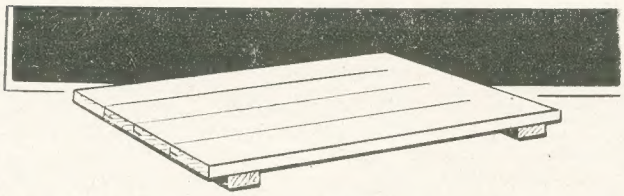
The type of informal picture to get

Where the entertainment is ambitious enough to include a small sketch or a play with characters dressed to their parts, obviously there will be ample opportunities for some first-class camera studies. It is very important when taking any such subject where acting plays such a prominent feature that the

(Continued foot of page 187)

The craftsman will find it worth while to make for himself

A DRAWING BOARD



A DRAWING board is a practical necessity for almost every reader of *Hobbies*, so many of the drawings requiring to be enlarged or reproduced full size. Without such a board drawings becomes a difficult job, and something of a bore. Apart from drawing, a flat board has a multitude of uses for other work, modelling, for example.

Nowadays a good board of reasonable size is quite an expensive article, so if the reader can buy, or better still possesses, a few feet of suitable wood he can make good use of it by following the instructions contained in this article.

Wood and Size

The best wood to employ for the board is a soft pine, but failing that a good quality deal, free from knots and shakes, makes a good substitute. A useful thickness is anything from $\frac{5}{8}$in. to $\frac{7}{8}$in. and a tongued and grooved edging is desirable. Selected pieces of matchboarding would serve nicely, if used with the beaded edges underneath, and if secondhand, all the better, as it is likely to be well seasoned.

A drawing board, which will not shrink or warp in variations of weather, is necessary, so some care must be taken in its construction. Firstly the size must be decided on, and here a choice lies

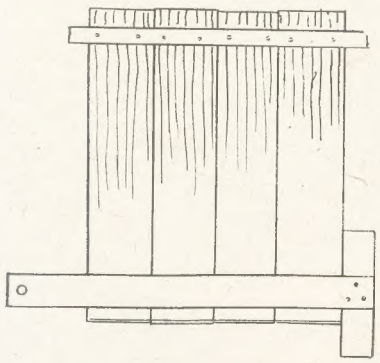


Fig. 1—Marking the end for trim

between two of the standard sizes of professional boards. These are 16ins. by 23ins., and 23ins. by 31ins.

For all practical purposes the larger size is to be preferred, especially for draughtsmanship, but if the necessary quantity of wood is not available then the smaller size must do. However, the smaller size is not to be despised, it is of useful dimensions.

Having selected the lengths of board, and thrown out all pieces with knots place enough together to make a board of the chosen dimensions, allowing a little extra in length for subsequent trimming. Near one end, on the underside, lightly nail a strip of wood across, as in Fig. 1, to keep the boards together. A T square will now be wanted. This is laid near the opposite end and a pencil line drawn across as near to the edge of the board as convenient. Subsequent trimming of the end will be on this line.

At about 1in. from the pencil line for the smaller board, or 2ins. for the larger one, draw with the aid of the T square a second pencil line across (see Fig. 1). This line is a guide to fixing the left side bottom across, which with its opposite number, will keep the board together.

At Fig. 2 an underside view of the board is given, showing the position of these battens and how they are fixed. They are cut about 2ins. wide and the full width of the board, from similar thickness wood to that employed for the board itself.

Back Battens

The battens are, however, not merely nailed or screwed across, but are carefully screwed through slots, so that room is allowed for any slight expansion or contraction due to the changes of weather. At only one of the boards is an ordinary screw hole employed, that near or at the centre; the rest are screwed through the slots.

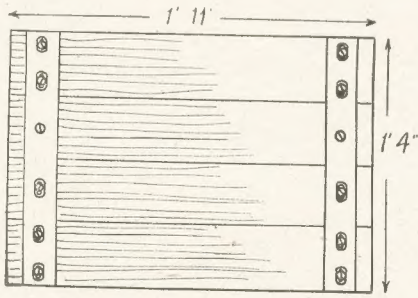


Fig. 2—Back view showing slotted battens

Place the batten across and mark carefully exactly where the central screw hole and the remaining screw slots are to come. The right length of screws is important, and should be the combined thickness of board and batten, less $\frac{1}{4}$in.

For example, using $\frac{5}{8}$in. wood for both, then 1in. screws will be about right. Bore the holes for the screws large enough to allow them to be pushed through with the fingers, and well countersink them. For the slots, bore and countersink a pair of holes $\frac{1}{2}$in. apart, as at (A) Fig. 3, and cut the holes to form the slot, as at (B).

Allowing Expansion

Now lay the batten across the board, touching the guide line drawn. Fix the centre screw first, press the boards well together, (no glue) and drive the screws through the slots. The holes in the board for these screws should be made with a bradawl of a suitable size to allow the threads to cut their way in. The left end of the board can then be trimmed off to the pencil line with a saw. Take care to saw accurately on the line.

The spare strip of wood, previously driven in across the opposite end can now be wrenched off, and the second batten and trimming off line put on as before. The whole should now be firm and the ends at true right-angles to the sides. Important this when subsequently using the T square, etc., for drawing. Glasspaper the ends of the board, and rub off all the sharp corner angles. The surface of the board should then be made quite smooth for working on.

Necessary Drawing Instruments

For drawing purposes, a T square and set square of 45 degrees and 60 degrees (or 30 degrees) should be provided. These are much better bought than made and are quite reasonable. A compass will be necessary in most cases, and with those already mentioned, provide most of the equipment necessary.

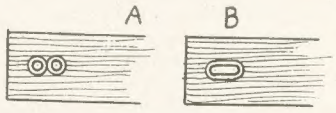


Fig. 3—Making the screw slots

Keep a sheet of stout cardboard handy to cover the board for modelling purposes, or for such jobs as cutting and trimming paper and materials on.

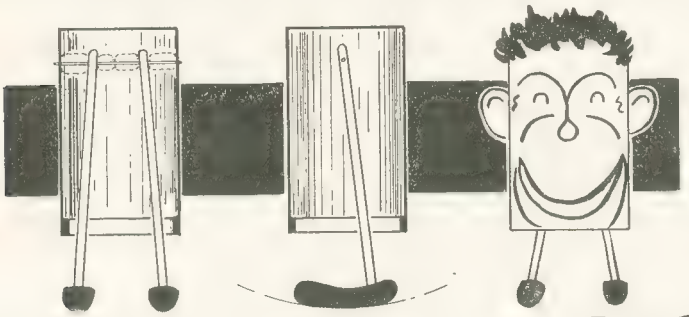
Birmingham Branch Loss

Readers who use the Bull Ring Branch of Hobbies Ltd. at Birmingham will recall the courtesy and helpful service they always received from the efficient Manageress there. They will learn with regret that that lady, Mrs. B. A. Redstone, died recently at Acocks Green after a short illness. Her service with Hobbies Ltd. had gone back prior to the 1914/18 war, and her enthusiasm and lively interest in Hobbies had been maintained throughout all the years of her service.

There's something very amusing in watching WADDLING WILFRED

MANY readers must have seen those quaint figures such as here illustrated, which, when placed on a slope, waddle down in a most amusing fashion. They will probably have wanted to make similar models. It is not at all difficult if trouble is taken to understand the principle on which they work. Any odd scraps of material may be used. It is hardly possible to give definite dimensions for every part, as readers will be using, as just suggested, all sorts of scraps.

The main bodies in every case are most conveniently made from cardboard tube (postal tube). This can be cut in lengths with a fret or tenon saw on a bench hook. Tube of about 1½ins. to 2ins. is about right, though the model can be made practically any size.



The legs are made of thin dowel—say, ⅛in. diameter or not much more in the case of the smaller models. The feet are made of soft wood carved with a penknife to the shape and proportion shown. Note the angle at which the legs enter the feet.

Wire Axle

The axle at the top is just a stiff piece of wire. The holes in the tops of the legs are drilled at a slight slant so that when assembled, the legs are splayed out a little, so that they do not knock one against the other. By means of beads, the legs are kept spaced out nicely.

As it is rather difficult to bore small holes in fine dowel, it is possible to use flat metal strip, such as that sold for Juneero outfits, for the legs, though in this case it will not be so easy to fit the feet on.

It is of utmost importance to bear in mind that the *centre of gravity of the tube must be well below the axle.* For this reason it may be necessary to fit a strip of lead all round the bottom. This is specially important when subsequent decorations (big noses, etc.) alter the balance.

When placed on a slope, the cylinder of the model naturally swings like a plumb bob, so as to right itself, and as it does so, it knocks against one of the legs. Owing to the curvature at the foot, one leg is pushed forward. This again alters the balance. The cylinder swings again, to right itself, and in doing so, knocks the other leg. So the process goes on. Remember, then, that if the bottom is not heavier than the top, the toy cannot possibly work, and if your model refuses to act properly, do not blame the instructions, but check up this vital point.

Having got the basic model to work, the interesting job of decorating can be done. The top, of course, is covered in. Were it not for the difficulty of inserting the axle in such a case, a canister with a closed top (or bottom) could be used in the first place.

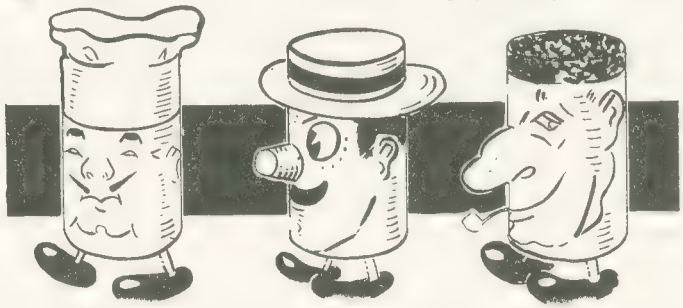
Hats and Features

The top of the cylinder forms the top of the hat, the rim of the 'straw' hat shown being just a ring of cardboard fitted on in a tight fit. The chef's hat can be of paper or of cloth. The Dutchman's fur hat can be a scrap of actual fur if available, and the same applies to the monkey's hair.

Ears are usually painted on, though in the case of the monkey, these can be made separately of thin card or leather and stuck on. Noses can sometimes be painted on, and at other times, modelled. A cork makes a good basis. This is used without alteration in the middle figure of the bottom line. The Dutchman's prominent nose can be basically a cork plus plastic wood, or carved from a piece of balsa wood.

Decorations

In decorating, one can start off by pasting plain paper round the cylinders and then using poster paints (with, perhaps, a final coat of varnish to stop them getting soiled too easily) or they can be given a coat of size (thin glue) and when quite dry, painted with enamels.



The smoothness and the slant of the slope down which the figures waddle, is best found by experience. It looks very amusing to have several of these figures waddling down a slope. They look very much like those giant continental carnival figures one sees on newsreel films.

Christmas Studies—(*Continued from page* 185)

actor or actress should be impressed not to spoil the effect by any suggestion of posing for a photograph. Even the dressing up for and playing a charade make a very good substitute for a play and, therefore, a good subject for an exposure or two.

Should it be that this Christmas you intend to do some work of this type for the first time, do be persuaded to make a permanent record of all the data relating to each exposure. Note the make of film, the stop used and the time given, the strength of the light and the distance from camera to the nearest person; what developer and how long the film was left in it. Put this record somewhere where it can be quickly found for future use. The information so gleaned is really invaluable and will prevent errors and spoiled films.

In finishing this article we would impress on all amateurs the necessity for aiming to get some results that are artistic and not merely records of a few moments fun. If a little care is taken in placing the folks, and the removal of any piece of furniture that happens to be too obtrusive, the result will be found to give much greater satisfaction to all concerned.

The care and attention which is given beforehand is more than repaid by the improved results, and pictures which are worth preserving in the family album, for reference in after years.

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Hints on how to use a Spray Gun doing CELLULOSE VARNISHING

READERS who have made a spray gun or, perhaps, bought one, may find some hints on using it for cellulose varnishing welcome. Undoubtedly such varnishing on a painted metal surface gives much better results than any enamel can do, unless it is stoved. The surface obtained shows no brush marks, stands up to acid stains well, and is not easy to scratch.

The varnish can be applied with a brush, but the spray gun is much to be preferred, and owning one it would be folly not to use it. The hints given below are meant primarily for application to metal, but could equally well be copied for painted woodwork.

Smooth Surface Essential

A smooth surface is necessary to work upon, so if the metal is already enamelled or painted, this must be removed, all of it. A proprietary paint and varnish remover can be used for this job, and should be applied according to the directions on the bottle. There are removers which can be made up at home, but they are messy and rather unpleasant, and there is little or no saving as compensation.

Having removed all the old enamel, go over the surface with a worn piece of emery cloth and clean away all traces, leaving a clean surface. Wash off and dry, then apply two coats of whatever colour of paint is chosen.

The Two Coats

The first coat can be ordinary outdoor paint, the second is better if flat, or containing but little boiled linseed oil. Let both coats dry thoroughly, then rub all over the work with a felt pad, on which pumice powder has been sprinkled, damping the pad with a little water. This will smooth the coating, though dulling it.

If considered necessary, give a third coat of paint and smooth that similarly, the object being to obtain a solid surface on which to apply the cellulose. Wipe off all traces of the pumice powder and leave to dry.

The cellulose varnish should be mixed with an equal quantity of the special thinner, made by the manufacturers, and the container of the gun filled with it. Get to work, and cover the surface with the spray, repeating the operation two or three times, with an interval between of an hour or so, until the gloss begins to show.

Wet Glasspaper

Then leave it alone for a day. Examine the surface, and where necessary rub over with wet glasspaper to even out the coating, but take care not to rub through the surface. Wash off, and rub all over with chamois leather.

Now give a further two or more coats, as many as may be necessary, and allowing ample time between each for the varnish to dry. The last coat should be of the varnish, thinned down with twice its bulk of the special thinners. Do not attempt to hurry the work, but allow ample time between each coat. Cellulose varnishing, like French polishing, calls for patience if a really satisfactory result is to ensue.

For a High Polish

To bring up a high polish at the last, the work should be rubbed over with a polishing compound on a soft cloth. A special wax polish is made by the makers of the cellulose varnish for this purpose.

The result should provide a clear glassy surface, very professional to the eye, and long wearing. It would also be applied to many articles of furniture, especially trays and table tops, where stains and burns are more likely to occur.

Take care to clean the nozzle of the spray gun after use, and when the job is finished; and work, if possible in a moderately warm room.

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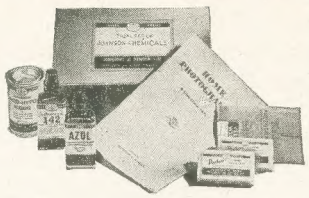

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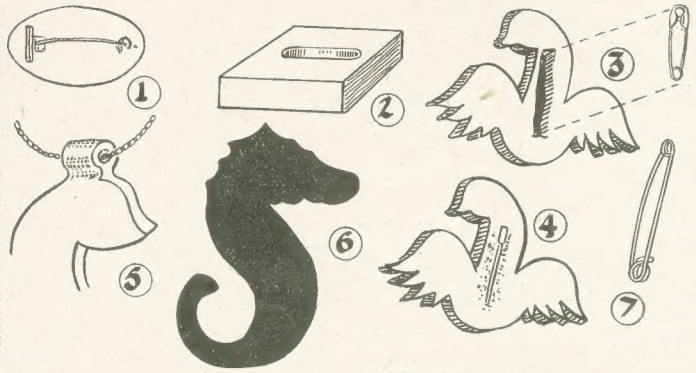

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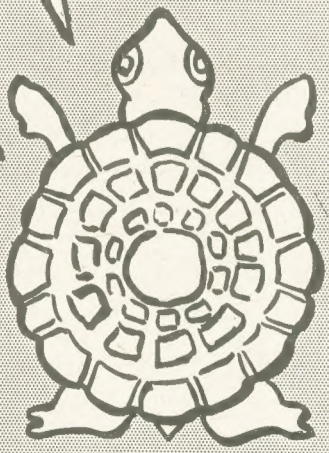

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